Electricity and Magnetism, Slovenia, MIRS/SIQ (Metrology Institute of the Republic of Slovenia - Slovenian Institute of Quality and Metrology)

Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
DC voltage: sources: single values	Standard cell, solid state voltage standard	Direct comparison with standard	10	10	V			0.7	µV/V	2	95%	Yes			1
DC voltage: sources: single values	Standard cell, solid state voltage standard: *V*	Voltage ratio with resistive divider	1	100	V	*V* output voltage	1 V, 1.018 V, 100 V	1	µV/V	2	95%	Yes			2
DC voltage: sources: single values	Multifunction calibrator	Voltage ratio with resistive divider	1	1	kV			2	µV/V	2	95%	Yes			3
DC voltage sources: low values	DC voltage source, calibrator	Measurement with nanovoltmeter	0	10	µV			0.05 to 0.08	µV	2	95%	No			4
DC voltage sources: low values	DC voltage source, calibrator	Measurement with nanovoltmeter	10	100	µV			0.08	µV	2	95%	No			5
DC voltage sources: low values	DC voltage source, calibrator	Measurement with nanovoltmeter	0.1	1	mV			0.8 to 0.11	mV/V	2	95%	Yes			6
DC voltage sources: low values	DC voltage source, calibrator	Measurement with nanovoltmeter	1	10	mV			110 to 80	µV/V	2	95%	Yes			7
DC voltage sources: low values	DC voltage source, multifunction calibrator	Measurement with DMM	10	100	mV			110 to 15	µV/V	2	95%	Yes			8
DC voltage sources: low values	DC voltage source, multifunction calibrator	Voltage ratio with resistive divider	0.1	1	V			3	µV/V	2	95%	Yes			9
DC voltage sources: low values	DC voltage source, multifunction calibrator	Voltage ratio with resistive divider	1	10	V			2	µV/V	2	95%	Yes			10
DC voltage sources: intermediate values	DC voltage source, multifunction calibrator	Voltage ratio with resistive divider	10	100	V			2	µV/V	2	95%	Yes			11
DC voltage sources: intermediate values	DC voltage source, multifunction calibrator	Voltage ratio with resistive divider	100	1000	V			5	µV/V	2	95%	Yes			12

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	Instrument or artifact	Instrument Type or Method	Minimum value	Maximum value	units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?	Uncertainty matrix	Comments	NMI Service Identifier
DC voltage meters: very low values	Nanovoltmeter, microvoltmeter	Voltage ratio with standard resistors	0	10	µV			0.01 to 0.08	µV	2	95%	No			13
DC voltage meters: very low values	Nanovoltmeter, microvoltmeter	Voltage ratio with standard resistors	10	100	µV			0.08	µV	2	95%	No			14
DC voltage meters: very low values	Nanovoltmeter, microvoltmeter	Voltage ratio with standard resistors	0.1	1	mV			0.08	µV	2	95%	No			15
DC voltage meters: intermediate values	DC voltmeter, multimeter, multifunction transfer standard	Voltage ratio with standard resistors	1	10	mV			80 to 10	µV/V	2	95%	Yes			16
DC voltage meters: intermediate values	DC voltmeter, multimeter, multifunction transfer standard	Voltage ratio with standard resistors	10	100	mV			10 to 5	µV/V	2	95%	Yes			17
DC voltage meters: intermediate values	DC voltmeter, multimeter, multifunction transfer standard	Voltage ratio with resistive divider	0.1	1	V			3	µV/V	2	95%	Yes			18
DC voltage meters: intermediate values	DC voltmeter, multimeter, multifunction transfer standard	Voltage ratio with resistive divider	1	100	V			2	µV/V	2	95%	Yes			19
DC voltage meters: intermediate values	DC voltmeter, multimeter, multifunction transfer standard	Voltage ratio with resistive divider	100	1000	V			5	µV/V	2	95%	Yes			20
DC voltage ratios: up to 1100 V	Resistive divider, ratio meter	Comparison to reference divider	1E-07	1		Input voltage	1 V to 100 V	0.2E-06		2	95%	No			21
DC resistance standards and sources: low values	Fixed resistor	Comparison by means of a current comparator bridge	0.1	10	mΩ	Oil bath temperature	23 °C	15	µΩ/Ω	2	95%	Yes			22
DC resistance standards and sources: low values	Fixed resistor, resistance box	Comparison by means of a current comparator bridge	10	100	mΩ	Oil bath temperature	23 °C	2	µΩ/Ω	2	95%	Yes			23

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Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
DC resistance standards and sources: low values	Fixed resistor, resistance box	Comparison by means of a current comparator bridge	0.1	1	Ω	Oil bath temperature	23 °C	0.9	μΩ/Ω	2	95%	Yes			24
DC resistance standards and sources: intermediate values	Fixed resistor, resistance box	Comparison by means of a current comparator bridge	1	100	Ω	Oil bath temperature	23 °C	0.8	μΩ/Ω	2	95%	Yes			25
DC resistance standards and sources: intermediate values	Fixed resistor, resistance box	Comparison by means of a current comparator bridge	0.1	10	kΩ	Oil bath temperature	23 °C	0.6	μΩ/Ω	2	95%	Yes			26
DC resistance standards and sources: intermediate values	Fixed resistor, resistance box	Comparison by means of a binary voltage divider bridge	10	100	kΩ	Oil bath temperature	23 °C	0.7	μΩ/Ω	2	95%	Yes			27
DC resistance standards and sources: intermediate values	Fixed resistor, resistance box	Comparison by means of a binary voltage divider bridge	0.1	1	MΩ			1	μΩ/Ω	2	95%	Yes			28
DC resistance standards and sources: high values	Fixed resistor, three terminal resistor, resistance box	Comparison by means of a binary voltage divider bridge	1	10	MΩ			2	μΩ/Ω	2	95%	Yes			29
DC resistance standards and sources: high values	Fixed resistor, three terminal resistor, resistance box	Comparison by means of a binary voltage divider bridge	10	100	MΩ			3	μΩ/Ω	2	95%	Yes			30
DC resistance standards and sources: high values	Fixed resistor, three terminal resistor, resistance box	Comparison by means of a binary voltage divider bridge	0.1	1	GΩ			15	μΩ/Ω	2	95%	Yes			31
DC resistance standards and sources: high values	Fixed resistor, three terminal resistor, resistance box	Current integration	1	10	GΩ			0.9	mΩ/Ω	2	95%	Yes			32

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
DC resistance standards and sources: high values	Fixed resistor, three terminal resistor, resistance box	Current integration	10	100	GΩ			1.2	mΩ/Ω	2	95%	Yes			33
DC resistance standards and sources: high values	Fixed resistor, three terminal resistor, resistance box	Current integration	0.1	1	TΩ			2.5	mΩ/Ω	2	95%	Yes			34
DC resistance standards and sources: high values	Fixed resistor, three terminal resistor, resistance box	Current integration	1	10	TΩ			4	mΩ/Ω	2	95%	Yes			35
DC resistance standards and sources: high values	Fixed resistor, three terminal resistor	Current integration	10	100	TΩ			6	mΩ/Ω	2	95%	Yes			36
DC resistance standards and sources: multiple ranges	Multifunction calibrator	Comparison by means of a current comparator bridge	1	100	Ω			0.8	μΩ/Ω	2	95%	Yes			37
DC resistance standards and sources: multiple ranges	Multifunction calibrator	Comparison by means of a current comparator bridge	0.1	10	kΩ			0.6	μΩ/Ω	2	95%	Yes			38
DC resistance standards and sources: multiple ranges	Multifunction calibrator	Comparison by means of a binary voltage divider bridge	10	100	kΩ			0.7	μΩ/Ω	2	95%	Yes			39
DC resistance standards and sources: multiple ranges	Multifunction calibrator	Comparison by means of a binary voltage divider bridge	0.1	1	MΩ			1	μΩ/Ω	2	95%	Yes			40
DC resistance standards and sources: multiple ranges	Multifunction calibrator	Comparison by means of a binary voltage divider bridge	1	10	MΩ			2	μΩ/Ω	2	95%	Yes			41
DC resistance standards and sources: multiple ranges	Multifunction calibrator	Comparison by means of a binary voltage divider bridge	10	100	MΩ			3	μΩ/Ω	2	95%	Yes			42

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
DC resistance meters: low values	Microohmmeter, multimeter, multifunction transfer standard, resistance bridge	Comparison to standard resistor	0.1	0.1	mΩ			50	μΩ/Ω	2	95%	Yes			43
DC resistance meters: low values	Microohmmeter, multimeter, multifunction transfer standard, resistance bridge	Comparison to standard resistor	1	1	mΩ			30	μΩ/Ω	2	95%	Yes			44
DC resistance meters: low values	Microohmmeter, multimeter, multifunction transfer standard, resistance bridge	Comparison to standard resistor	10	10	mΩ			20	μΩ/Ω	2	95%	Yes			45
DC resistance meters: low values	Microohmmeter, multimeter, multifunction transfer standard, resistance bridge	Comparison to standard resistor	100	100	mΩ			10	μΩ/Ω	2	95%	Yes			46
DC resistance meters: low values	Microohmmeter, multimeter, multifunction transfer standard, resistance bridge	Comparison to standard resistor	1	1	Ω			3	μΩ/Ω	2	95%	Yes			47
DC resistance meters: intermediate values	Ohmmeter, multimeter, multifunction transfer standard, resistance bridge: *R*	Comparison to standard resistor	0.01	1	kΩ	*R* resistance	0.01 kΩ, 0.1 kΩ, 1 kΩ	1	μΩ/Ω	2	95%	Yes			48
DC resistance meters: intermediate values	Ohmmeter, multimeter, multifunction transfer standard, resistance bridge	Comparison to standard resistor	10	10	kΩ			2	μΩ/Ω	2	95%	Yes			49
DC resistance meters: intermediate values	Ohmmeter, multimeter, multifunction transfer standard, resistance bridge	Comparison to standard resistor	100	100	kΩ			5	μΩ/Ω	2	95%	Yes			50

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
DC resistance meters: intermediate values	Ohmmeter, multimeter, multifunction transfer standard, resistance bridge	Comparison to standard resistor	1	1	MΩ			10	μΩ/Ω	2	95%	Yes			51
DC resistance meters: intermediate values	Ohmmeter, multimeter, multifunction transfer standard, resistance bridge	Comparison to standard resistor	10	10	MΩ			15	μΩ/Ω	2	95%	Yes			52
DC resistance meters: intermediate values	Ohmmeter, multimeter, multifunction transfer standard, resistance bridge: *R*	Comparison to standard resistor	0.1	1	GΩ	*R* resistance	0.1 GΩ, 1 GΩ	0.7	mΩ/Ω	2	95%	Yes			53
DC resistance meters: high values	Teraohmmeter, resistance bridge	Comparison to standard resistor	10	10	GΩ			2	mΩ/Ω	2	95%	Yes			54
DC resistance meters: high values	Teraohmmeter, resistance bridge	Comparison to standard resistor	100	100	GΩ			2.5	mΩ/Ω	2	95%	Yes			55
DC resistance meters: high values	Teraohmmeter, resistance bridge: *R*	Comparison to standard resistor	1	10	TΩ	*R* resistance	1 TΩ, 10 TΩ	4	mΩ/Ω	2	95%	Yes			56
DC resistance meters: high values	Teraohmmeter, resistance bridge	Comparison to standard resistor	100	100	TΩ			9	mΩ/Ω	2	95%	Yes			57
DC current sources: low values	Current generator, multifunction calibrator	U / R ratio	0.1	2	μA			70 to 10	μA/A	2	95%	Yes			58
DC current sources: low values	Current generator, multifunction calibrator	U / R ratio	0.002	0.1	mA			10	μA/A	2	95%	Yes			59
DC current sources: intermediate values	Current generator, multifunction calibrator	U / R ratio	0.1	20	mA			10	μA/A	2	95%	Yes			60

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Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
DC current sources: intermediate values	Current generator, multifunction calibrator	U / R ratio	20	200	mA			10 to 20	μA/A	2	95%	Yes			61
DC current sources: intermediate values	Current generator, multifunction calibrator	U / R ratio	0.2	1	A			20 to 70	μA/A	2	95%	Yes			62
DC current sources: intermediate values	Current generator, multifunction calibrator	U / R ratio	1	20	A			70 to 120	μA/A	2	95%	Yes			63
DC current meters: low values	Nanoammeter, multimeter, multifunction transfer standard	U / R ratio	0.1	2	μA			70 to 10	μA/A	2	95%	Yes			64
DC current meters: low values	Nanoammeter, multimeter, multifunction transfer standard	U / R ratio	0.002	0.1	mA			10	μA/A	2	95%	Yes			65
DC current meters: intermediate values	Multimeter, multifunction transfer standard	U / R ratio	0.1	20	mA			10	μA/A	2	95%	Yes			66
DC current meters: intermediate values	Multimeter, multifunction transfer standard	U / R ratio	20	200	mA			10 to 20	μA/A	2	95%	Yes			67
DC current meters: intermediate values	Multimeter, multifunction transfer standard	U / R ratio	0.2	1	A			20 to 70	μA/A	2	95%	Yes			68
DC current meters: intermediate values	Multimeter, multifunction transfer standard	U / R ratio	1	20	A			70 to 120	μA/A	2	95%	Yes			69
AC resistance: real component	Fixed resistor	Comparison to standard resistor	0.001	100	kΩ	Frequency	100 Hz to 10 MHz	0.4 to 3	mΩ/Ω	2	95%	Yes	AC_R		70
AC resistance: real component	Fixed resistor	Measurement with LCR meter	0.001	10000	kΩ	Frequency	100 Hz to 1 MHz	1.3 to 30	mΩ/Ω	2	95%	Yes			71

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Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
AC resistance: meters	LCR meter, impedance analyzer	Direct measurement	0.001	100	kΩ	Frequency	100 Hz to 10 MHz	0.4 to 3	mΩ/Ω	2	95%	Yes	AC_R		72
Capacitance: low loss capacitors	Standard capacitor (air, fused silica)	Comparison by means of a transformer bridge	10	1000	pF	Capacitance	10 pF, 100 pF, 1 nF	20	µF/F	2	95%	Yes		*This CMC is related to the next one*	73
						Frequency	1 kHz								
Capacitance: dissipation factor for low loss capacitors	Standard capacitor (air, fused silica)	Comparison by means of a transformer bridge	0.0001	1		Capacitance	1 pF to 1 nF	0.00001 to 0.00035		2	95%	No		*This CMC is related to the previous one*	74
						Frequency	1 kHz								
Capacitance: low loss capacitors	4TP or coaxial air dielectric capacitor	Comparison to standard capacitor	1	1000	pF	Frequency	100 Hz to 10 MHz	0.5 to 11	mF/F	2	95%	Yes	Cap	*This CMC is related to the next one*	75
Capacitance: dissipation factor for low loss capacitors	4TP or coaxial air dielectric capacitor	Comparison to standard capacitor	0	0.01		Capacitance	1 pF to 1 nF	0.00011		2	95%	No		*This CMC is related to the next one*	76
						Frequency	100 Hz to 1 MHz								
Capacitance: dissipation factor for low loss capacitors	4TP or coaxial air dielectric capacitor	Comparison to standard capacitor	0	0.01		Capacitance	1 pF to 1 nF	0.001		2	95%	No		*This CMC is related to the previous ones*	78
						Frequency	1 MHz to 10 MHz								
Capacitance: dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Measurement with transformer bridge	0.001	1100	nF	Frequency	1 kHz	0.13 to 0.1	mF/F	2	95%	Yes		*This CMC is related to the next one*	80
Capacitance: dissipation factor for dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Measurement with transformer bridge	0.00001	0.01		Capacitance	1 pF to 1.1 µF	0.00002 to 0.00035		2	95%	No		*This CMC is related to the previous one*	81
						Frequency	1 kHz								
Capacitance: dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Measurement with transformer bridge	1	10	µF	Frequency	1 kHz	0.1 to 0.3	mF/F	2	95%	Yes			82

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Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
Capacitance: dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Comparison by means of a Schering bridge	0.01	100	nF	Capacitance	10 pF, 100 pF, 1 nF, 10 nF, 100 nF	0.2	mF/F	2	95%	Yes			83
						Frequency	50 Hz								
Capacitance: dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Comparison by means of a Schering bridge	0.00001	100	µF	Frequency	50 Hz	0.5	mF/F	2	95%	Yes		*This CMC is related to the next one*	84
Capacitance: dissipation factor for dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Comparison by means of a Schering bridge	0.00001	0.1		Capacitance	10 pF to 100 µF	0.00005 to 0.00055		2	95%	No		*This CMC is related to the previous one*	85
						Frequency	50 Hz								
Capacitance: dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Comparison by means of a Schering bridge	0.1	1	mF	Frequency	50 Hz	1	mF/F	2	95%	Yes		*This CMC is related to the next one*	86
Capacitance: dissipation factor for dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box: *C*	Comparison by means of a Schering bridge	0.00001	0.1		*C* capacitance	0.1 mF to 1 mF	0.0001 to 0.0006		2	95%	No		*This CMC is related to the previous one*	87
						Frequency	50 Hz								
Capacitance: dielectric capacitors	Fixed capacitor	Comparison to transformed capacitor	0.1	1	mF	Frequency	100 Hz, 120 Hz, 1 kHz	0.7 to 5	mF/F	2	95%	Yes	Cap_2		88
Capacitance: transformed capacitors	Fixed capacitor, switched capacitor	Comparison to transformed capacitor	1	1000	mF	Frequency	100 Hz, 120 Hz, 1 kHz	2 to 20	mF/F	2	95%	Yes	Cap_2		89
Capacitance: meters	Capacitance bridge, LCR meter: *C*	Direct measurement	10	1000	pF	*C* capacitance	10 pF, 100 pF, 1 nF	20	µF/F	2	95%	Yes			90
						Frequency	1 kHz								
Capacitance: meters	Capacitance bridge, LCR meter	Direct measurement	0.001	1100	nF	Frequency	1 kHz	0.13 to 0.1	mF/F	2	95%	Yes			91
Capacitance: meters	Capacitance bridge, LCR meter	Comparison by means of transformer bridge	1	10	µF	Frequency	1 kHz	0.1 to 0.3	mF/F	2	95%	Yes			92

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Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
Capacitance: meters	Capacitance bridge, LCR meter	Direct measurement	0.1	1000	mF	Frequency	100 Hz, 120 Hz, 1 kHz	0.7 to 20	mF/F	2	95%	Yes	Cap_2		93
Capacitance: meters	LCR meter, impedance analyzer	Direct measurement	1	1000	pF	Frequency	100 Hz to 10 MHz	0.5 to 11	mF/F	2	95%	Yes	Cap		94
Inductance: self inductance, low values	Fixed inductor, inductance box	Substitution	0.1	0.1	mH	Frequency	1 kHz	0.3	mH/H	2	95%	Yes			95
Inductance: self inductance, low values	Fixed inductor, variable inductor, inductance box	Substitution	0.1	1	mH	Frequency	1 kHz	1	mH/H	2	95%	Yes			96
Inductance: self inductance, intermediate values	Fixed inductor, inductance box	Substitution	1	1000	mH	Inductance	1 mH, 10 mH, 100 mH, 1 H	0.3	mH/H	2	95%	Yes			97
						Frequency	1 kHz								
Inductance: self inductance, intermediate values	Fixed inductor, variable inductor, inductance box	Substitution	1	1000	mH	Frequency	1 kHz	1	mH/H	2	95%	Yes			98
Inductance: self inductance, high values	Fixed inductor, inductance box	Substitution	10	10	H	Frequency	1 kHz	0.3	mH/H	2	95%	Yes			99
Inductance: self inductance, high values	Fixed inductor, variable inductor, inductance box	Substitution	1	10	H	Frequency	1 kHz	1	mH/H	2	95%	Yes			100
Inductance: meters	Inductance bridge, LCR meter	Direct measurement	0.1	10000	mH	Inductance	0.1 mH, 1 mH, 10 mH, 0.1 H, 1 H, 10 H	0.3	mH/H	2	95%	Yes			101
						Frequency	1 kHz								
Inductance: meters	Inductance bridge, LCR meter	Direct measurement	0.1	10000	mH	Frequency	1 kHz	1	mH/H	2	95%	Yes			102
AC voltage: AC-DC transfer difference at medium voltages	Thermal converter, AC-DC transfer standard	Comparison with reference standard	0.5	5	V	Frequency	20 Hz to 1 MHz	0.03 to 0.7	mV/V	2	95%	Yes	AV_DV		103
AC voltage: AC-DC transfer difference at higher voltages	Thermal converter, AC-DC transfer standard	Comparison with reference standard	10	1000	V	Frequency	20 Hz to 1 MHz	0.03 to 0.7	mV/V	2	95%	Yes	AV_DV		104

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Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
AC voltage up to 1000 V: sources	Multifunction calibrator	Comparison with reference standard	0.002	1000	V	Frequency	10 Hz to 1 MHz	0.03 to 8	mV/V	2	95%	Yes	AV		105
AC voltage up to 1000 V: meters	AC voltmeter, multimeter, multifunction transfer standard	Comparison with reference standard	0.002	1000	V	Frequency	10 Hz to 1 MHz	0.03 to 8	mV/V	2	95%	Yes	AV		106
AC current up to 100 A: sources	Multifunction calibrator, transconductance amplifier	AC-DC current transfer	0.0001	10	A	Frequency	20 Hz to 10 kHz	0.12 to 0.6	mA/A	2	95%	Yes	AC_1		107
AC current up to 100 A: meters	AC ammeter, multimeter, multifunction transfer standard	Multifunction calibrator	0.005	10	A	Frequency	40 Hz to 10 kHz	0.3 to 5	mA/A	2	95%	Yes	AC_2		108
AC power and energy: single phase (f <= 400 Hz), apparent power	Power converter, power meter, wattmeter	Direct voltage sampling	0.0001	600	VA	Frequency	45 Hz to 65 Hz	20	µVA/VA	2	95%	Yes			109
						Voltage	0.1 V to 120 V								
						Current	1 mA to 20 mA, 1 A to 5 A								
AC power and energy: single phase (f <= 400 Hz), apparent power	Power converter, power meter, wattmeter	Direct voltage sampling	0.1	3500	VA	Frequency	45 Hz to 65 Hz	50	µVA/VA	2	95%	Yes			110
						Voltage	0.1 V to 700 V								
						Current	1 A to 5 A								
AC power and energy: single phase (f <= 400 Hz), apparent power	Power converter, power meter, wattmeter	Direct voltage sampling	0.0001	35000	VA	Frequency	45 Hz to 65 Hz	0.25	mVA/VA	2	95%	Yes			111
						Voltage	0.1 V to 700 V								
						Current	1 mA to 50 A								
AC power and energy: single phase (f <= 400 Hz), active power	Power converter, power meter, wattmeter	Direct voltage sampling	0	600	W	Power factor	1 to 0, inductive or capacitive	20	µW/VA	2	95%	Yes			112
						Voltage	0.1 V to 120 V								

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
						Current	1 mA to 20 mA, 1 A to 5 A								
						Frequency	45 Hz to 65 Hz								
AC power and energy: single phase (*f* <= 400 Hz), active power	Power converter, power meter, wattmeter	Direct voltage sampling	0	3500	W	Power factor	1 to 0, inductive or capacitive	50 to 80	µW/VA	2	95%	Yes		The range given for uncertainty defines the minimum and maximum values when the parameters vary within the indicated ranges	113
						Voltage	0.1 V to 700 V								
						Current	1 A to 5 A								
						Frequency	45 Hz to 65 Hz								
AC power and energy: single phase (*f* <= 400 Hz), active power	Power converter, power meter, wattmeter	Direct voltage sampling	0	35000	W	Power factor	1 to 0, inductive or capacitive	0.25 to 0.4	mW/VA	2	95%	Yes		The range given for uncertainty defines the minimum and maximum values when the parameters vary within the indicated ranges	114
						Voltage	0.1 V to 700 V								
						Current	1 mA to 50 A								
						Frequency	45 Hz to 65 Hz								
AC power and energy: single phase (*f* <= 400 Hz), reactive power	Power converter, power meter, wattmeter	Direct voltage sampling	0	600	var	Sin φ	0 to 1, inductive or capacitive	20	µvar/VA	2	95%	Yes			115
						Voltage	0.1 V to 120 V								
						Current	1 mA to 20 mA, 1 A to 5 A								
						Frequency	45 Hz to 65 Hz								

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
AC power and energy: single phase (*f* <= 400 Hz), reactive power	Power converter, power meter, wattmeter	Direct voltage sampling	0	3500	var	Sin φ	0 to 1, inductive or capacitive	50 to 80	µvar/VA	2	95%	Yes		The range given for uncertainty defines the minimum and maximum values when the parameters vary within the indicated ranges	116
						Voltage	0.1 V to 700 V								
						Current	1 A to 5 A								
						Frequency	45 Hz to 65 Hz								
AC power and energy: single phase (*f* <= 400 Hz), reactive power	Power converter, power meter, wattmeter	Direct voltage sampling	0	35000	var	Sin φ	0 to 1, inductive or capacitive	0.25 to 0.4	mvar/VA	2	95%	Yes		The range given for uncertainty defines the minimum and maximum values when the parameters vary within the indicated ranges	117
						Voltage	0.1 V to 700 V								
						Current	1 mA to 50 A								
						Frequency	45 Hz to 65 Hz								
High DC voltage: high voltage sources	DC kilovolt source	Measurement with resistive divider	1	10	kV			0.3	mV/V	2	95%	Yes			118
High DC voltage: high voltage meters	DC kilovoltmeter, dedicated set-up for high voltage	Measurement with resistive divider	1	10	kV			0.3	mV/V	2	95%	Yes			119
RF power: absolute power on coaxials	Reference source	Reference power sensor	1	1	mW	Frequency	50 MHz	5	mW/W	2	95%	Yes			120
RF power: absolute power on coaxials	Power source	Power sensor	3E-10	25	W	Frequency	DC to 18 GHz	10 to 80	mW/W	2	95%	Yes	RF_P_1		121
						Connector	type N, 50 Ω								
						Bandwidth	wideband								
RF power: absolute power on coaxials	Power source	Thermocouple power sensor	0.001	100	mW	Frequency	DC to 26.5 GHz	10 to 40	mW/W	2	95%	Yes	RF_P_2		122

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
						Connector	PC-3.5								
						Bandwidth	wideband								
RF power: absolute power on coaxials	Power source, measuring receiver: power *P*	Comparison with reference measuring receiver	0	-100	dBm	Frequency	2.5 MHz to 1.3 GHz	[0.0005(-*P*) + 0.06], *P* in dB	dB	2	95%	No			123
						Connector	type N, 50 Ω								
						Bandwidth	approximatively 200 Hz								
RF power: absolute power on coaxials	Power source, measuring receiver: power *P*	Comparison with reference measuring receiver	-100	-120	dBm	Frequency	2.5 MHz to 1.3 GHz	[0.005(-*P*-100) + 0.11], *P* in dB	dB	2	95%	No			124
						Connector	type N, 50 Ω								
						Bandwidth	approximatively 200 Hz								
RF power: calibration factor on coaxials	Thermistor, power sensor	Comparison with reference sensor	0.7	1.1		Frequency	DC to 1 GHz	0.008		2	95%	No			125
						Power	1 mW to 10 mW								
						Connector	type N, 50 Ω; PC-7; PC-3.5								
RF power: calibration factor on coaxials	Thermistor, power sensor	Comparison with reference sensor	0.7	1.1		Frequency	1 GHz to 4 GHz	0.010		2	95%	No			126
						Power	1 mW to 10 mW								
						Connector	type N, 50 Ω; PC-7; PC-3.5								
RF power: calibration factor on coaxials	Thermistor, power sensor	Comparison with reference sensor	0.7	1.1		Frequency	4 GHz to 8 GHz	0.013		2	95%	No			127
						Power	1 mW to 10 mW								
						Connector	type N, 50 Ω; PC-7; PC-3.5								
RF power: calibration factor on coaxials	Thermistor, power sensor	Comparison with reference sensor	0.7	1.1		Frequency	8 GHz to 12 GHz	0.015		2	95%	No			128
						Power	1 mW to 10 mW								

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
						Connector	type N, 50 Ω; PC-7; PC-3.5								
RF power: calibration factor on coaxials	Thermistor, power sensor	Comparison with reference sensor	0.7	1.1		Frequency	12 GHz to 18 GHz	0.02		2	95%	No			129
						Power	1 mW to 10 mW								
						Connector	type N, 50 Ω; PC-7; PC-3.5								
RF power: calibration factor on coaxials	Thermistor, power sensor	Comparison with reference sensor	0.7	1.1		Frequency	18 GHz to 26.5 GHz	0.03		2	95%	No			130
						Power	1 mW to 10 mW								
						Connector	PC-3.5								
Scalar RF reflection coefficient: on coaxials	Passive device	Scalar network analyzer	0.01	0.1		Frequency	10 MHz to 18 GHz	0.018 to 0.03		2	95%	No			131
						Connector	type N, 50 Ω; PC-7								
Scalar RF reflection coefficient: on coaxials	Passive device	Scalar network analyzer	0.1	1		Frequency	10 MHz to 18 GHz	0.022 to 0.35		2	95%	No			132
						Connector	type N, 50 Ω; PC-7								
Scalar RF reflection coefficient: on coaxials	Passive device	Scalar network analyzer	0.01	0.1		Frequency	10 MHz to 26.5 GHz	0.02 to 0.06		2	95%	No			133
						Connector	type PC-3.5								
Scalar RF reflection coefficient: on coaxials	Passive device	Scalar network analyzer	0.1	1		Frequency	10 MHz to 26.5 GHz	0.04 to 0.35		2	95%	No			134
						Connector	type PC-3.5								
Scalar RF attenuation: on coaxials	Passive device	Broadband power ratio	0	30	dB	Frequency	DC to 18 GHz	0.05 to 0.2	dB	2	95%	No		The uncertainty depends on the attenuation	135
						Connector	type N, 50 Ω								

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
Scalar RF attenuation: on coaxials	Passive device	Broadband power ratio	30	60	dB	Frequency	10 MHz to 18 GHz	0.15 to 0.4	dB	2	95%	No		The uncertainty depends on the attenuation	136
						Connector	type N, 50 Ω								
Scalar RF attenuation: on coaxials	Passive device: attenuation *A*	Comparison with reference measuring receiver	0	100	dB	Frequency	2.5 MHz to 1.3 GHz	(0.0005*A* + 0.03), *A* in dB	dB	2	95%	No			137
						Connector	type N, 50 Ω								
Scalar RF attenuation: on coaxials	Passive device: attenuation *A*	Comparison with reference measuring receiver	100	120	dB	Frequency	2.5 MHz to 1.3 GHz	[0.005(*A* - 100) + 0.6], *A* in dB	dB	2	95%	No			138
						Connector	type N, 50 Ω								
Scalar RF reflection and attenuation: directivity	Directional bridge	Ripple extraction	0.003	0.032		Frequency	10 MHz to 18 GHz	0.006		2	95%	No			139
						Connector	type N, 50 Ω; PC-7								
Scalar RF reflection and attenuation: directivity	Directional bridge	Ripple extraction	0.005	0.1		Frequency	10 MHz to 26.5 GHz	0.01		2	95%	No			140
						Connector	type PC-3.5								
Signal and pulse characteristics: pulse amplitude	Oscilloscope, pulse and function generator	DC voltage sampling	0.2	2	mV	Frequency	DC or 1 kHz	2 to 1	µV	2	95%	No			141
						Waveform	square wave								
Signal and pulse characteristics: pulse amplitude	Oscilloscope, pulse and function generator	DC voltage sampling	2	20	mV	Frequency	DC or 1 kHz	1	mV/V	2	95%	Yes			142
						Waveform	square wave								
Signal and pulse characteristics: pulse amplitude	Oscilloscope, pulse and function generator	DC voltage sampling	0.05	100	V	Frequency	DC or 1 kHz	0.5	mV/V	2	95%	Yes			143
						Waveform	square wave								

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
Signal and pulse characteristics: pulse amplitude	Oscilloscope, pulse and function generator	Measurement with sampling oscilloscope	-1.5	1.5	V	Pulse repetition frequency	< 1 GHz	2 to 17	mV	2	95%	No			144
Signal and pulse characteristics: pulse time parameters: time interval	Oscilloscope, pulse and function generator	Measured from sinewave amplitude and slope	10	100	ps			1.2 to 2.5	ps	2	95%	No			145
Signal and pulse characteristics: pulse time parameters: time interval	Oscilloscope, pulse and function generator	Measured from sinewave amplitude and slope	0.1	1	ns			2.6 to 8	ps	2	95%	No			146
Signal and pulse characteristics: pulse time parameters: time interval	Oscilloscope, pulse and function generator	Measurement with sampling oscilloscope	1	1000	ns			8 to 110	ps	2	95%	No			147
Signal and pulse characteristics: pulse time parameters	Oscilloscope, pulse and function generator: time interval absolute *t*	Measurement with time interval counter	1E-06	5	s			(0.1E-09 + 1E-09*t*), *t* in seconds	s	2	95%	No			148
Signal and pulse characteristics: pulse time parameters: risetime	Oscilloscope, pulse and function generator: risetime *tr*	Measurement with picostep generator or sampling oscilloscope	5E-11	1E-06	s	Pulse repetition frequency	up to 100 kHz	(3E-11 + 0.05*tr*), *tr* in seconds	s	2	95%	No			149
Signal and pulse characteristics: amplitude modulation	Signal generator, spectrum analyser, modulation meter: modulation index *m*	Envelope linearity	0.05	0.95		Carrier frequency	0.15 MHz to 10 MHz	0.003 to 0.024		2	95%	No			150
						Modulating frequency	0.05 kHz to 10 kHz								

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
Signal and pulse characteristics: amplitude modulation	Signal generator, spectrum analyser, modulation meter: modulation index: *m*	Envelope linearity	0.05	0.95		Carrier frequency	10 MHz to 1300 MHz	0.002 to 0.013		2	95%	No			151
						Modulating frequency	0.05 kHz to 50 kHz								
Signal and pulse characteristics: amplitude modulation	Signal generator, spectrum analyser, modulation meter: modulation index: *m*	Envelope linearity	0.05	0.95		Carrier frequency	10 MHz to 1300 MHz	0.003 to 0.03		2	95%	No			152
						Modulating frequency	50 kHz to 100 kHz								
Signal and pulse characteristics: amplitude modulation	Signal generator, spectrum analyser, modulation meter: modulation index: *m*	Envelope linearity	0.05	0.95		Carrier frequency	1.3 GHz to 26.5 GHz	0.002 to 0.016		2	95%	No			153
						Modulating frequency	0.05 kHz to 50 kHz								
Signal and pulse characteristics: frequency modulation	Signal generator, spectrum analyser, modulation meter, jitter meter	Bessel zero measurement	1	200	kHz	Carrier frequency	0.15 MHz to 10 MHz	5	mHz/Hz	2	95%	Yes			154
						Modulating frequency	0.05 kHz to 10 kHz								
Signal and pulse characteristics: frequency modulation	Signal generator, spectrum analyser, modulation meter, jitter meter	Bessel zero measurement	1	200	kHz	Carrier frequency	10 MHz to 1300 MHz	5	mHz/Hz	2	95%	Yes			155
						Modulating frequency	0.05 kHz to 100 kHz								

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Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	**Instrument or artifact**	**Instrument Type or Method**	**Minimum value**	**Maximum value**	**units**	**Parameter**	**Specifications**	**Value**	**Units**	**Coverage Factor**	**Level of Confidence**	**Is the expanded uncertainty a relative one?**	**Uncertainty matrix**	**Comments**	**NMI Service Identifier**
Signal and pulse characteristics: frequency modulation	Signal generator, spectrum analyser, modulation meter, jitter meter	Bessel zero measurement	1	200	kHz	Carrier frequency	1.3 GHz to 26.5 GHz	10	mHz/Hz	2	95%	Yes			156
						Modulating frequency	0.05 kHz to 100 kHz								
Signal and pulse characteristics: distortion	Signal generator, spectrum analyzer, distortion meter	AC voltage ratio	0	0.1		Frequency	20 Hz to 100 kHz	0.00007 to 0.027		2	95%	No			157
Signal and pulse characteristics: harmonic content	Signal generator, spectrum analyzer	Spectrum analyzer	0	70	dBc	Frequency of highest harmonic	up to 26.5 GHz	2 to 3	dB	2	95%	No			158
RF voltage: RF-DC transfer difference	Thermal voltage converter, ac-dc current standard	RF/DC voltage transfer	0.8	1.2	V	Frequency	1 MHz to 1 GHz	1 to 25	mV/V	2	95%	Yes	RF_V_1		159
						Connector	N, 50 Ω; N, 200 Ω; BNC, 50 Ω; BNC, 200 Ω								
RF voltage sources	RF generator: matched output voltage	Thermocouple power sensor	0.05	2.2	V	Frequency	1 MHz to 2 GHz	13 to 3.4	mV/V	2	95%	Yes	RF_V_2	Reflection coefficient of the measured generator shall be less than 0.1	160
						Connector	N, 50 Ω								
RF voltage meters	RF voltmeter: incident voltage	Leveled matched source	0.05	2.2	V	Frequency	1 MHz to 2 GHz	25 to 3.7	mV/V	2	95%	Yes	RF_V_3	Reflection coefficient of the RF voltmeter shall be less than 0.05	161
						Connector	N, 50 Ω								

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Uncertainty table: AC_R

AC resistance: real component, MIRS/SIQ Internal Identifier: 70

AC resistance: meters, MIRS/SIQ Internal Identifier: 72

	100 Hz to 30 kHz	30 kHz to 100 kHz	100 kHz to 1 MHz	1 MHz to 10 MHz
1 Ω	0.6	0.6	2.1	-
10 Ω	0.6	0.6	2.1	-
100 Ω	0.4	0.4	0.4	3
1 kΩ	0.4	0.4	0.4	2
10 kΩ	0.4	0.4	2	-
100 kΩ	0.4	2	-	-

The expanded uncertainties given in this table are expressed in mΩ/Ω

Electricity and Magnetism, Slovenia

MIRS/SIQ (Metrology Institute of the Republic of Slovenia - Slovenian Institute of Quality and Metrology)

Uncertainty table: Cap

Capacitance: low loss capacitors, MIRS/SIQ Internal Identifier: 75

Capacitance: meters, MIRS/SIQ Internal Identifier: 94

	100 Hz to 1 MHz	1 MHz to 10 MHz
1 pF	2	11
10 pF	0.6	2
100 pF	0.5	2
1000 pF	0.5	6

The expanded uncertainties given in this table are expressed in mF/F

Electricity and Magnetism, Slovenia

MIRS/SIQ (Metrology Institute of the Republic of Slovenia - Slovenian Institute of Quality and Metrology)

Uncertainty table: Cap_2

Capacitance: dielectric capacitors, MIRS/SIQ Internal Identifier: 88

Capacitance: transformed capacitors, MIRS/SIQ Internal Identifier: 89

Capacitance: meters, MIRS/SIQ Internal Identifier: 93

	100 Hz	120 Hz	1 kHz
0.1 mF	0.7	0.7	1
1 mF	2	2	5
10 mF	5	5	-
100 mF	10	-	-
1 F	20	-	-

The expanded uncertainties given in this table are expressed in mF/F

Electricity and Magnetism, Slovenia

MIRS/SIQ (Metrology Institute of the Republic of Slovenia - Slovenian Institute of Quality and Metrology)

Uncertainty table: AV_DV

AC voltage: AC-DC transfer difference at medium voltages, MIRS/SIQ Internal Identifier: 103

AC voltage: AC-DC transfer difference at higher voltages, MIRS/SIQ Internal Identifier: 104

	20 Hz	40 Hz	1 kHz	20 kHz	50 kHz	100 kHz	500 kHz	1 MHz
0.5 V	-	0.04	0.03	0.03	-	0.15	-	-
1 V / 2 V	0.08	0.04	0.03	0.03	0.06	0.15	0.3	0.7
3 V	-	0.04	-	0.03	-	0.15	-	-
5 V	-	0.04	0.03	0.03	-	0.15	-	-
10 V / 20 V	0.08	0.04	0.03	0.03	0.06	0.15	0.3	0.7
30 V / 50 V	-	0.04	-	0.03	-	0.15	-	-
100 V	0.09	0.04	0.03	0.04	0.09	0.2	-	-
200 V	0.09	0.07	0.05	0.07	0.25	0.45	-	-
300 V	-	0.07	-	0.07	-	0.45	-	-
500 V	-	0.07	0.05	0.07	0.25	0.5	-	-
1000 V	0.09	0.07	0.05	0.07	0.25	0.5	-	-

The expanded uncertainties given in this table are expressed in mV/V

Electricity and Magnetism, Slovenia

MIRS/SIQ (Metrology Institute of the Republic of Slovenia - Slovenian Institute of Quality and Metrology)

Uncertainty table: AV

AC voltage up to 1000 V: sources, MIRS/SIQ Internal Identifier: 105

AC voltage up to 1000 V: meters, MIRS/SIQ Internal Identifier: 106

	10 Hz to 20 Hz	20 Hz to 40 Hz	40 Hz to 20 kHz	20 kHz to 50 kHz	50 kHz to 100 kHz	100 kHz to 200 kHz	200 kHz to 500 kHz	500 kHz to 1 MHz
2 mV to 5 mV	1.1	1.1	1.1	1.4	1.7	2.7	5.5	8
5 mV to 20 mV	0.5	0.5	0.5	0.6	0.75	1.2	2.5	4.4
20 mV to 60 mV	0.2	0.15	0.15	0.19	0.25	0.38	1	2.5
60 mV to 100 mV	0.18	0.1	0.1	0.1	0.14	0.25	0.55	1.4
100 mV to 200 mV	0.15	0.075	0.05	0.05	0.09	0.18	0.4	1.2
200 mV to 2 V	0.14	0.055	0.03	0.03	0.07	0.14	0.3	1.1
2 V to 20 V	0.14	0.055	0.03	0.035	0.08	0.18	0.45	1.5
20 V to 200 V	0.15	0.06	0.04	0.045	0.1	-	-	-
200 V to 1000 V	0.15	0.09	0.055	0.15	0.6	-	-	-

The expanded uncertainties given in this table are expressed in mV/V

Electricity and Magnetism, Slovenia

MIRS/SIQ (Metrology Institute of the Republic of Slovenia - Slovenian Institute of Quality and Metrology)

Uncertainty table: AC_1

AC current up to 100 A: sources, MIRS/SIQ Internal Identifier: 107

	20 Hz to 1 kHz	1 kHz to 5 kHz	5 kHz to 10 kHz
0.1 mA to 200 mA	0.12	0.16	0.36
200 mA to 3 A	0.2	0.23	0.4
3 A to 10 A	0.46	0.48	0.6

The expanded uncertainties given in this table are expressed in mA/A

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Uncertainty table: AC_2

AC current up to 100 A: meters, MIRS/SIQ Internal Identifier: 108

	40 Hz to 1 kHz	1 kHz to 5 kHz	5 kHz to 10 kHz
5 mA	0.3	0.3	0.5
10 mA, 20 mA, 30 mA, 50 mA, 100 mA	0.35	0.4	0.55
0.2 A	0.35	0.4	0.6
0.3 A / 0.5 A	0.45	0.5	1
1 A	0.45	0.6	1.5
2 A	0.5	0.8	2
3 A	0.8	1.2	3
5 A	0.8	1.2	4
10 A	1	2	5

The expanded uncertainties given in this table are expressed in mA/A

Electricity and Magnetism, Slovenia

MIRS/SIQ (Metrology Institute of the Republic of Slovenia - Slovenian Institute of Quality and Metrology)

Uncertainty table: RF_P_1

RF power: absolute power on coaxials, MIRS/SIQ Internal Identifier: 121

	DC to 100 kHz	100 kHz to 10 MHz	10 MHz to 1 GHz	1 GHz to 4 GHz	4 GHz to 8 GHz	8 GHz to 18 GHz
0.3 nW to 100 nW	-	-	80	80	80	80
100 nW to 10 µW	-	-	50	60	70	80
10 µW to 1 mW	20	20	20	30	40	50
1 mW to 10 mW	10	10	10	15	20	30
10 mW to 100 mW	20	20	20	20	30	40
0.1 W to 3 W	-	30	30	40	-	-
3 W to 25 W	-	50	50	50	-	-

The expanded uncertainties given in this table are expressed in mW/W

Electricity and Magnetism, Slovenia

MIRS/SIQ (Metrology Institute of the Republic of Slovenia - Slovenian Institute of Quality and Metrology)

Uncertainty table: RF_P_2

RF power: absolute power on coaxials, MIRS/SIQ Internal Identifier: 122

	DC to 1 GHz	1 GHz to 4 GHz	4 GHz to 8 GHz	8 GHz to 18 GHz	18 GHz to 26.5 GHz
1 µW to 10 µW	20	25	30	35	40
10 µW to 100 µW	15	18	25	28	35
100 µW to 1 mW	12	18	22	25	35
1 mW to 10 mW	10	15	20	25	30
10 mW to 100 mW	12	18	22	25	35

The expanded uncertainties given in this table are expressed in mW/W

Electricity and Magnetism, Slovenia

MIRS/SIQ (Metrology Institute of the Republic of Slovenia - Slovenian Institute of Quality and Metrology)

Uncertainty table: RF_V_1

RF voltage: RF-DC transfer difference, MIRS/SIQ Internal Identifier: 159

	1 MHz	1 MHz to 3 MHz	3 MHz to 10 MHz	10 MHz to 30 MHz	30 MHz to 50 MHz	0.05 GHz to 0.1 GHz	0.1 GHz to 0.2 GHz	0.2 GHz to 0.3 GHz	0.3 GHz to 0.5 GHz	0.5 GHz to 0.7 GHz	0.7 GHz to 1 GHz
type N, 50 Ω	1	1.1	1.3	1.6	2	4	5	5	7	8	9
type N, 200 Ω	1	1.1	1.3	1.7	2.5	4	6	8	12	16	21
BNC, 50 Ω	1	1.2	1.6	2.5	4	5	7	8	10	15	20
BNC, 200 Ω	1	1.2	1.6	2.5	4	5	7	8	10	16	25

The expanded uncertainties given in this table are expressed in mV/V

Electricity and Magnetism, Slovenia

MIRS/SIQ (Metrology Institute of the Republic of Slovenia - Slovenian Institute of Quality and Metrology)

Uncertainty table: RF_V_2

RF voltage sources, MIRS/SIQ Internal Identifier: 160

	1 MHz to 30 MHz	0.03 GHz to 0.3 GHz	0.3 GHz to 0.5 GHz	0.5 GHz to 1.2 GHz	1.2 GHz to 2 GHz
0.05 V to 0.1 V	13	13	13	13	13
0.1 V to 0.2 V	7	7	7	7	7
0.2 V to 0.5 V	5	5	5	5	5
0.5 V to 1 V	4	4	4	4	4
1 V to 2.2 V	3.4	3.5	3.6	3.9	4.2

The expanded uncertainties given in this table are expressed in mV/V

Electricity and Magnetism, Slovenia

MIRS/SIQ (Metrology Institute of the Republic of Slovenia - Slovenian Institute of Quality and Metrology)

Uncertainty table: RF_V_3

RF voltage meters, MIRS/SIQ Internal Identifier: 161

	1 MHz to 30 MHz	0.03 GHz to 0.3 GHz	0.3 GHz to 0.5 GHz	0.5 GHz to 1.2 GHz	1.2 GHz to 2 GHz
0.05 V to 0.1 V	13	13	13	15	25
0.1 V to 0.2 V	7	7	7	8	10
0.2 V to 0.5 V	5	5	5	5	7
0.5 V to 1 V	4	4	4	4	5
1 V to 2.2 V	3.7	3.8	4	4.2	4.4

The expanded uncertainties given in this table are expressed in mV/V